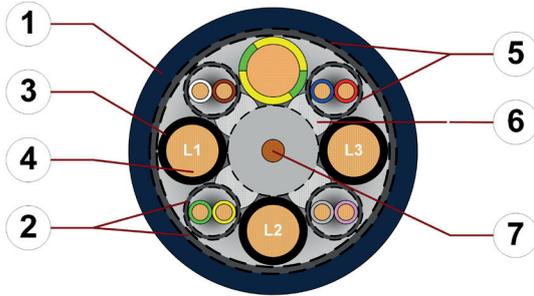


# Data sheet

## chainflex® CFROBOT7

Motor cable (Class 6.1.3.3) ● For torsion applications ● PUR outer jacket ● Shielded ● Oil-resistant and coolant-resistant ● Flame retardant ● PVC and halogen-free ● Notch-resistant ● Hydrolysis and microbe-resistant



1. Outer jacket: Pressure extruded PUR mixture
2. Shield: Extremely torsion-resistant wrapping made of tinned copper wires
3. Core insulation: Mechanically high-quality TPE mixture
4. Conductor: Stranded conductor in especially bending-resistant version consisting of bare copper wires
5. Banding: Plastic fleece
6. Filling: Plastic yarns
7. Strain relief: Tensile stress-resistant and torsion-resistant centre element



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



**Example image**  
For detailed overview please see design table

### Cable structure

<b>Conductor</b>	Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
<b>Core insulation</b>	Mechanically high-quality TPE mixture.
<b>Core identification</b>	<p><b>Power cores:</b> Black cores with white numbers, one green-yellow core.</p> <p><b>2 Control pairs:</b> Black cores with white numbers.</p> <p>1. Control core: 5      2. Control core: 6</p> <p>3. Control core: 74. Control core: 8</p> <p><b>4 Control pairs:</b> Colour code in accordance with DIN 47100</p>
<b>Overall shield</b>	Extremely torsion-resistant tinned wound copper shield. Coverage optical approx. 85 %
<b>Outer jacket</b>	Low-adhesion, halogen-free, highly abrasion resistant PUR mixture, adapted to suit the requirements in e-chains® (following DIN EN 50363-10-2) <b>Colour:</b> Steel-blue (similar to RAL 5011) <b>Printing:</b> white

\* **Length printing:** Not calibrated. Only intended as an orientation aid.  
① / ② Cable identification according to Part No. (see technical table).  
Example: chainflex **CFROBOT7.15.03.C (3G1.5)C 600/1000V**

Example image

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### Dynamic information

Bend radius	e-chain® twisted	min. 10 x d
	flexible	min. 8 x d
	fixed	min. 5 x d
Temperature	e-chain® twisted	-25 °C up to +80 °C
	flexible	-40 °C up to +80 °C (following DIN EN 60811-504)
	fixed	-50 °C up to +80 °C (following DIN EN 50305)
v max.	twisted	180 °/s
a max.	twisted	60 °/s <sup>2</sup>
Travel distance	Robots and 3D movements, Class 1	

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These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.

### Guaranteed service life according to guarantee conditions

Cycles	5 million	7.5 million	10 million
Temperature, from/to [°C]	Torsion max. [°/m]	Torsion max. [°/m]	Torsion max. [°/m]
-25/-15	±150	±90	±30
-15/+70	±180	±120	±60
+70/+80	±150	±90	±30

Minimum guaranteed service life of the cable under the specified conditions.  
The installation of the cable is recommended within the middle temperature range.

### Electrical information

Nominal voltage	600/1000 V (following DIN VDE 0298-3) 1000 V (following UL)
Testing voltage	4000 V (following DIN EN 50395)

Example image

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### Properties and approvals

UV resistance	High
Oil resistance	Oil-resistant (following DIN EN 50363-10-2), Class 3
Flame retardant	According to IEC 60332-1-2, FT1, VW-1
Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
Halogen-free	Following DIN EN 60754
 <b>UL verified</b>	Certificate No. B129699: „igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year“
<b>UL/CSA AWM</b>	See table UL/CSA AWM for details
<b>NFPA</b>	Following NFPA 79-2018, chapter 12.9
<b>EAC</b>	Certificate No. RU C-DE.ME77.B.02324 (TR ZU)
<b>CTP</b>	Certificate No. C-DE.PB49.B.00420 (Fire protection)
<b>REACH</b>	In accordance with regulation (EC) No. 1907/2006 (REACH)
<b>Lead-free</b>	Following 2011/65/EC (RoHS-II/RoHS-III)
<b>Cleanroom</b>	According to ISO Class 1. The outer jacket material of this series complies with CF77. UL.05.12.D - tested by IPA according to standard DIN EN ISO 14644-1
<b>CE</b>	Following 2014/35/EU

igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



### Properties and approvals

#### UL/CSA AWM Details

Conductor nominal cross section [mm <sup>2</sup> ]	UL style core insulation	UL style outer jacket	UL Voltage Rating [V]	UL Temperature Rating [°C]
0.25	10492	21223	1000	80
0.34	10492	21223	1000	80
0.75	10492	21223	1000	80
1.5	10492	21223	1000	80
2.5	10492	21223	1000	80
4.0	10492	21223	1000	80
6.0	10492	21223	1000	80

Example image

igus® chainflex® CFROBOT 7

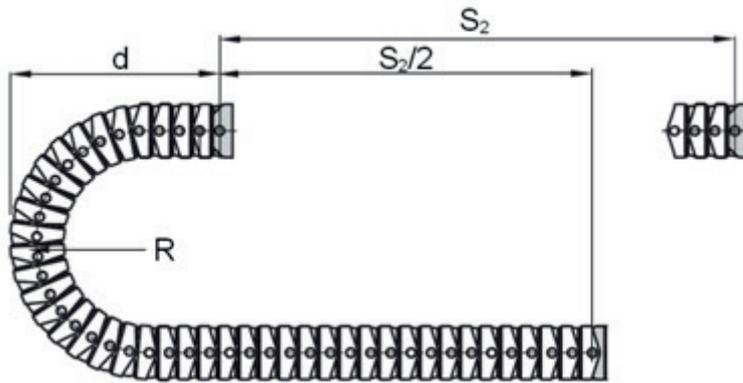
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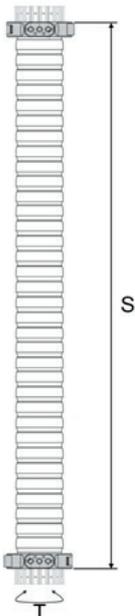
### Typical lab test setup for this cable series

Test bend radius R	approx. 90 - 175 mm
Test travel S/S <sub>2</sub>	approx. 1 - 12 m
Test duration	minimum 1.5 - 3 million double strokes
Test speed	approx. 0.5 m/s
Test acceleration	approx. 1.5 m/s <sup>2</sup>



### Typical lab test setup for this cable series

Torsion range T	±180°/m
Length 3D e-chain®	1 m
Test duration (torsion)	minimum 3 - 5 million cycles
Test speed (torsion)	approx. 80 - 120 °/s
Test acceleration (torsion)	approx. 40°/s <sup>2</sup>



Example image

igus® chainflex® CFROBOT 7



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### Typical application areas

- For heaviest duty applications with torsion movements, Class 6
- Especially for robots and 3D movements, Class 1
- Almost unlimited resistance to oil, Class 3
- Torsion  $\pm 180^\circ$ , with 1m cable length, Class 3
- Indoor and outdoor applications, UV-resistant
- Robots, Handling, spindle drives

### Technical tables:

#### Mechanical information

Part No.	Number of cores and conductor nominal cross section [mm <sup>2</sup> ]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
<b>without control pair</b>				
CFROBOT7.15.03.C	(3G1.5)C	8.5	61	98
CFROBOT7.15.04.C	(4G1.5)C	9.5	77	120
CFROBOT7.25.03.C	(3G2.5)C	10.0	93	142
CFROBOT7.25.04.C	(4G2.5)C	11.0	119	173
CFROBOT7.60.04.C	(4G6.0)C	15.0	278	374
<b>2 Control pairs</b>				
CFROBOT7.07.03.02.02.C	(4G0.75+2x(2x0.34)C)C	11.5	88	155
CFROBOT7.15.15.02.02.C	(4G1.5+2x(2x1.5)C)C	16.5	197	304
CFROBOT7.25.15.02.02.C	(4G2.5+2x(2x1.5)C)C	16.5	243	349
<b>4 Control pairs</b>				
CFROBOT7.40.02.02.04.C	(4G4.0+4x(2x0.25)C)C	17.0	253	366

**Note:** The given outer diameters are maximum values and may tend toward lower tolerance limits.  
G = with green-yellow earth core x = without earth core

#### Electrical information

Conductor nominal cross section [mm <sup>2</sup> ]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Maximum current rating at 30 °C [A]
0.25	79.0	5
1.5	13.3	21
2.5	8.0	30
4	4.45	41
6	3.3	53

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



igus 36-month chainflex cable guarantee and service life calculator based on 2 billion test cycles per year



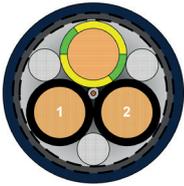
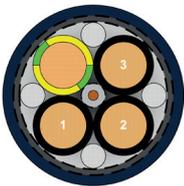
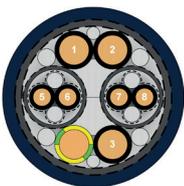

Example image

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### Design table

Part No.	Number of cores	Core design
CFROBOT7.XX.03.C	3	
CFROBOT7.XX.04.C	4	
CFROBOT7.XX.XX.02.02.C	4+2x2	
CFROBOT7.XX.XX.XX.04.C	4+4x2	

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Example image